



Microfiltration System

MOT-31/54

Water treatment by microfiltration with Katadyn ceramic filters

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1 General Instructions for Mobile Microfiltration System MOT-31/54

Congratulations on your selection of the mobile Microfiltration System MOT-31/54 from Katadyn. This product is designed to reduce the levels of bacteria and protozoan cysts commonly found in natural water sources. Thank you!

With the use of this system, you will be able to remove the microbial organisms from natural water.

These instructions will explain what you need to do to assemble and operate the system, as well as what is needed for regular maintenance and troubleshooting or repairs in conjunction with this treatment system.

Substances such as minerals and salts in treated water will remain unchanged. Water will also not be softened. Desalinating seawater is also not possible.



Pathogenic agents that cause the following diseases will be filtered: Typhoid, dysentery, amoebic and bacterial dysentery, bilharzia, cholera, Colibacillosis and Giardia. If you require information about bacteria not mentioned above, please contact the experts at Katadyn who will gladly discuss further details.






1.1 General Safety Guidelines

The mobile Microfiltration System MOT-31/54 from Katadyn has been factory tested. The dangers of improper use or failing to follow the operating procedures outlined in this manual may include:

- Water of unsafe microbial quality given to people or animals or industrially manufactured products using unsafe water or other fluids.
- The health and safety of operating personal.
- Burns from touching hot surfaces or components.
- Crushing, pinching or contusions caused by unintended handling of moving parts.

All persons who will be involved with the setup, startup, operations, maintenance and repair of the mobile Microfiltration System MOT-31/54 must be qualified and trained in its use and have read these instructions. They must also thoroughly read and understand the accompanying Honda Handbook from the company Honda Power Equipment. This is vital in maintaining their safety as well as avoiding the delivery of water that remains contaminated after the microfiltration.

	<p>The instructional manual must be read and completely understood before operating the mobile Microfiltration System MOT-31/54</p>
	<p>Before operating the mobile Microfiltration System MOT-31/54 or performing any work with the Honda Water Pump WH20X, the Honda Handbook must be read and understood.</p>



	Safety gloves with sufficient protection must always be worn when performing any maintenance on the mobile Microfiltration System MOT-31/54.
	Always properly dispose of waste products, in particular fluids in the pump unit, at designated locations or with specialists.
	In order to avoid accidents and possible work disability resulting from accidents due to improper operation of the Katadyn mobile Microfiltration System MOT-31/54, please observe and follow pertinent safety procedures. Improper handling of the Katadyn mobile Microfiltration System MOT-31/54 can put health at risk. Operating/handling duties may only be performed by trained personnel.
	Only open the filter chamber when it is unpressurized and emptied.
	Before cleaning, maintenance, repair or replacement of parts, the hydraulic unit must first be depressurized, and the pump unit turned off. These duties may only be performed by trained personnel.

1.2 Intended Applications

Only use the mobile Microfiltration System MOT-31/54 as well as any accompanying accessories / components per manufacturer's instructions. Intended usage is discussed in these instructions.

In order to ensure the mobile Microfiltration System MOT-31/54 can perform the described level of treatment, the parameters set out must be followed. In addition, the physical and chemical parameters for drinking water as required by state-specific requirements for drinking water fit for human consumption must also be adhered to.

The mobile Microfiltration System MOT-31/54 has been designed and built based on state-of-the-art technology, in order to provide safe operation when safety regulations and operating requirements are followed.

	Working on the mobile Microfiltration System MOT-31/54 as well as operation and use of the system is permitted only when the unit is in good condition technically and when attention is paid to safety standards and to potential hazards as described in these operation instructions, the handbook, as well as in this supplement. Only when these are followed without exception can operators and others avoid the loss of life and serious injuries or avoid interference with the system's operation or other material assets.
	Appropriately trained specialist must immediately repair malfunctions, damage, or resolve abnormal operations that could compromise safety!

2 Warranty and Product Liability

Manufacturer product liability and warranty is invalid in the case of damage and injuries stemming from operations, installation or maintenance not in compliance with system operations.

For example:

- Operational errors resulting from not being in compliance with safety, operations, and maintenance instructions and improper repairs.
- Improper use of the MOT-31/54 (use not in compliance with instructions).
- Use of repair parts not permitted by the MOT-31/54 manufacturer.
- Operators not using protective gear as described.
- Modifications of the MOT-31/54 without written permission from the manufacturer.
- Conducting improper work with tools inappropriate for the MOT-31/54.
- Failure to follow regular service and maintenance schedules.
- Improper Installation or operation of the MOT-31/54.

3 General Description

3.1 The microfiltration process

The Katadyn filter element is based on the functional principle of depth filtration. Filtration is a process of separation that can be produced by the mechanical and physical force of the ceramic structure. Thus, sediment and microorganisms are retained in the small pores of the ceramic material. This filtration effect is dependent on the size of the pores and the thickness of the ceramic layer. Depth filtration has a particular characteristic: Even particles smaller than the total pore size are retained on the inside of the ceramic based on the principle of adsorption. Katadyn ceramic filters are made from various natural raw materials of the highest quality standard. As such, we can attain a nominal pore size of 0.2 µm with insignificant variations.

3.2 Primary features of mobile microfiltration

- Reliable treatment and filtration
- Robust design
- Low maintenance costs
- Simple cleaning by hand with a brush
- Stand-alone operation: no electricity or other infrastructure needed

3.3 Primary uses for microfiltration

Civil protection, military (drinking water, emergency water supplies)

Drinking water (groundwater, spring water, surface water)

Beverage industry (drinking water, processing water, rinsing water)

Food industry (water for manufacturing, rinse water)

Milk processing (water for processing at dairies and cheese-making facilities)

Agriculture (Water for livestock, feed lot operation)

Mountain restaurants, huts (drinking water, washing water)

3.4 Assembly of the MOT-31/54

MOT-31/54 consists primarily of two main components: the filter unit and the pump unit.

The pump unit's task is to supply the untreated water from available water sources, to transport it to the filter unit, and to produce the needed system pressure for filtration.

Choose the location for the set up where the filter unit cannot be submersed in untreated water and the surface is dry and stable.

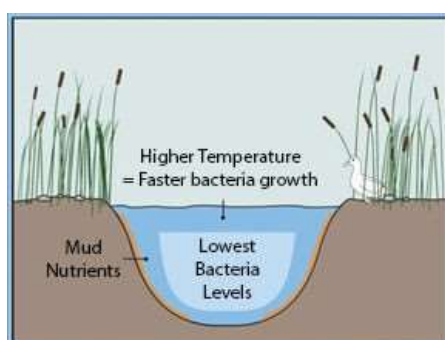
Maximum static suction lift of 5 meters may not be exceeded.

The water quantity that can be expected is represented on the graph on the next page. The quantities noted are based on new, or newly cleaned, filter elements. As the filter elements become dirtier, the flow rate also decreases accordingly.

Intervals between cleanings can be influenced positively with the appropriate placement of the suction hose. Placing the hose directly under the surface of the water. Placing the hose on the bottom of the water source should be avoided.

3.5 Water bacteria concentration

- **Nutrients**
In muddy ground, bacteria can multiply quickly, thanks to an outstanding supply of nutrients. Thus, if at all possible, do not place the intake filter in the mud or slime.
- **Varying water temperatures**
Higher temperatures promote the growth of bacteria. Standing and slowly moving water is warmer at the surface. Deeper water has lower bacteria concentrations.
- **Bacteria concentration**
More rapidly flowing water has lower levels because the water churns and becomes diluted. Be aware that churned-up sand can clog the filter.



3.6 Installation requirements of components

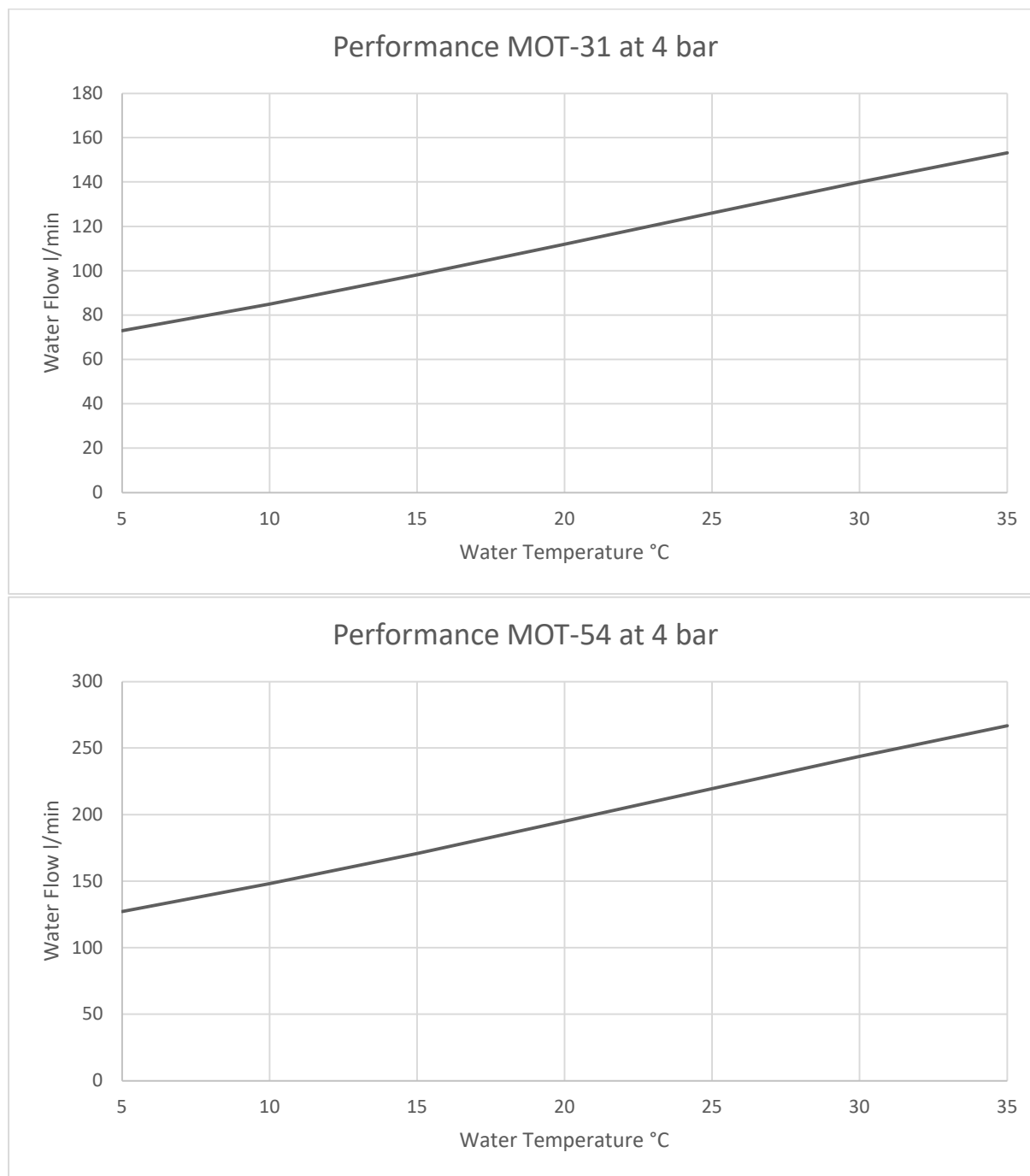
Filter Unit:

- Stable positioning
- Comfortable operational height for water delivery and filter cleaning
- Intake position / filter: Static suction lift < 5 meters
- Positioned near best water quality if possible
- Placement on a dry surface

Filter Connection:

- Pump inlet 2" (suction hose and intake filter are enclosed)
- Filter fresh water outlet: 1 ¼" MOT-31 / 2 " MOT-54
- Drain water outlet: 1 ¼" MOT-31 / 2 " MOT-54
- Cleaning hose connection ½" (hose is enclosed)

3.7 Flow rates of the MOT-31/54



The above chart shows the typical performance of the unit when operated in the standard operating conditions described in this manual. Increasing the static resistance of the system will reduce the volume of treated water. Optimal positioning of the intake hose (reducing dirt intake) increases the performance of the MOT-31/54.

4 Pump Honda WH 20X



WH 20X – extremely sturdy

The high-pressure pumps of the WH series are outfitted with the most durable and long-lasting Honda G X engines. The powerful engine and especially sturdy housing enable strong water delivery pressures with a water capacity of up to 500 liters per minute.

Capacity (l/min)	500
Capacity (m³/h)	30
Static suction lift	8 m
Port diameter	2"
Motor type	OHV GX 160
Rated output	3.6 kW
Rated speed	3600 U/min
Tank Capacity	3.1 L
Consumption (l/h)	1.6
Measurements (LxWxH)	435 x 375 x 400 mm
Weight	23.5 kg



Please refer to the accompanying Honda Manual regarding the correct handling of the high-pressure pump WH 20X. Both this manual and the manual from Honda must be read and completely understood.

Your safety depends on it!

4.1 Setup Procedure

Check the oil and fuel types and levels according to the Honda Handbook.



- Connect the suction hose for untreated water to the pump and position the intake filter in the water at the intended site based on the description in the operating instructions.

5 Filter Unit

The filter unit consists of a filter housing including fittings and framing, a filter cover including a vent valve, a filter housing gasket, 31 or 54 pieces of No. 5 filter elements, a cleaning hose, a measuring gauge, a handheld cleaning device.



5.1 Setup Procedure

Take care that the filter unit is placed in a stable position and that the location surface is dry.



- Remove the No. 5 filter elements from the package and screw them hand-tight into the filter housing. Pay particular attention that you do not tighten them too much. Over tightening can damage the filters.

- Close the filter housing and tighten the locking bolts with a maximum of 17 Nm.









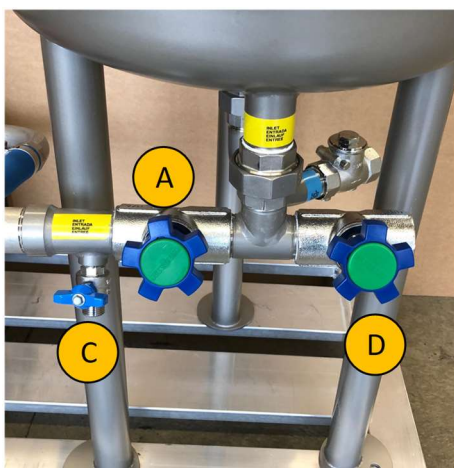
Hook up the cleaning hose to the corresponding threads. The MOT-31/54 is now ready for use.

6 Operational Procedures

6.1 Brief description of the handle position of operational components

Main Valve A Drain Valve D	<p>Open</p> 	<p>Close</p> 
Vent Valve B Cleaning Valve C	<p>Open</p> 	<p>Close</p> 

6.2 Filling / Venting



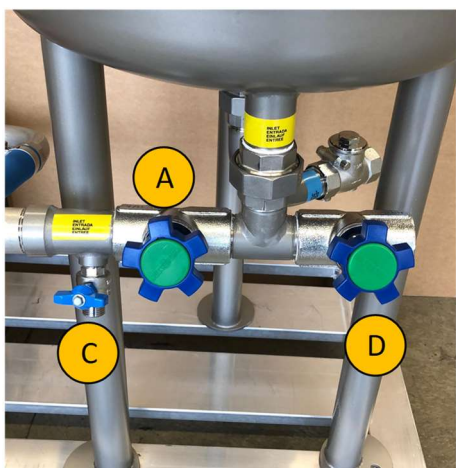
- Check that all valves are closed
- Start the motor and vent the pump
- Turn the main valve A counter clockwise to open

- Open vent valve B just slightly
- When water appears, close vent valve B (Caution: Water may begin flowing forcefully!)



Now the mobile microfiltration system MOT-31/54 is ready for use

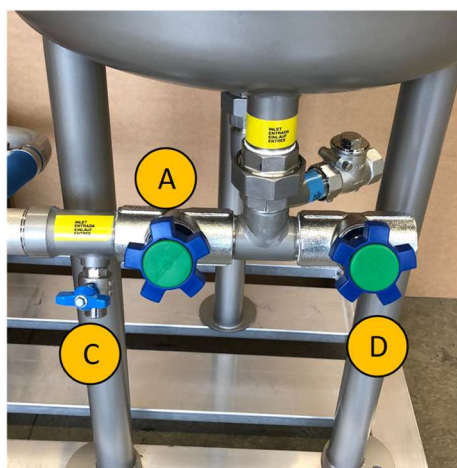
6.3 Operation



When in use, the operational components will be in the positions as depicted:

Main Valve A	Open
Cleaning Valve C	Close
Drain Valve D	Close

6.4 Emptying the filter unit



- Turn off the pump
- Close the main valve A
- Open vent valve B
- Open the drain valve D (emptying)

6.5 Water Sampling

Sampling must be performed by an experienced person according to DIN EN 25667-2 procedures. The mobile Microfiltration System MOT-31/54 must be set in the operational mode (see chapter 6.3).



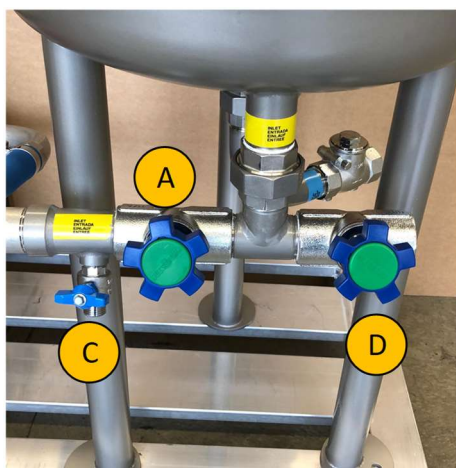
- After being prepared based on DIN EN 2557-2, the water sample must be taken at the outlet of the filter

7 Maintenance and Service

7.1 Honda Handbook reference

Please refer to the accompanying Honda Manual regarding the correct handling of the high-pressure pump WH 20X. Both this manual and the manual from Honda must be read and completely understood. Your safety depends on it!

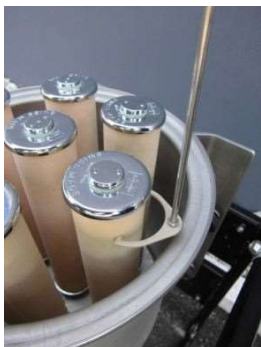
7.2 Cleaning the filter elements



- Turn off the pump
- Close the main valve A
- Open vent valve B
- Open the drain valve D (emptying)
- Open the housing the cover
- Close the drain valve D as soon as the filter elements are standing in water by 1/6 only.

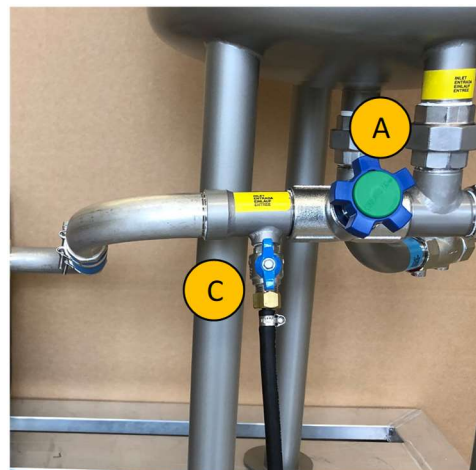


- Put the cleaning brush over the filter element and move it up and down 6-8 times and, at the same time, flush with water from the pump (For this process, water must not be filtered). Repeat the process as needed until the surface of the filter element is clean. In addition to the dirt particles that will be removed, some of the ceramic will also be rubbed off in the process. That is completely normal and desirable. In that way, you will be assured that the filter element has totally new filter characteristics when cleaning is completed.
- Repeat the above procedure on all filter elements.



- Check the filter elements using the measuring gauge. To do so, refer to Chapter 7.3 in this manual: “Examining the filter elements.”

- Start the Pump
- Open cleaning valve C
- Clean the filter elements and inside of the housing with the cleaning hose.
- Close cleaning valve C
- Stop the Pump
- Open the drain valve D and empty the filter housing
- Close the cover and tighten the locking bolts with a maximum of 17 Nm.
- The MOT-31/54 is ready for refilling or for storage



Before storage, the filter elements must air dry for at least two days.

7.3 Examining the filter elements

Examination of the thickness of the ceramic wall must be done with the measuring gauge provided. As soon as the gauge can be pushed over the ceramic, it means it has reached its minimum thickness, and the filter element must be replaced. In addition, elements showing signs of cracks must also be immediately replaced.





7.4 Troubleshooting Guide

Problem	Possibilities	Solution
Filter delivers low water quantities	Dirty filter element	Clean the filter element
	Valve is closed	Open valve
	Pump unit delivers too little water	Motor is not running at the max speed
	Suction filter not completely covered in water or dirty	Optimize the suction filter. Clean the filter.
	Suction filter positioned poorly (e.g. in sediment)	Optimize the suction filter's position.
	Loss of pressure in the filter system	Check the entire MOT-31/54 system for water leakage
Unsatisfactory water quality	Filter element broken	IMMEDIATELY replace the filter element
	Filter element has hairline cracks	IMMEDIATELY replace the filter element
	Filter element has hairline cracks	IMMEDIATELY replace the filter element

8 Contact information

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9 Replacement Parts and Filters

Product-Number	Description	Picture
20621 (SET)	Cleaning Hose MOT complete	
20616	Cleaning Brush for Katadyn Filter elements	
20335	Measurement gauge for Katadyn Filter elements	
7010095	1/4" butterfly Vent Valve V4A	

1250	Katadyn Filter element No. 5	
120003 120002	Cover Seal 500 x 9mm / MOT-31 Cover Seal 643 x 9mm / MOT-54	
7010633	Suction Hose M-MOT incl. coupling to Pump.	
20615	1 Pair of Brush Segments, Nylon	
20619	1 Pair of Brush Segments, Bronze Option for difficult residue	

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